Geometry Honors

Problem Sets

**Problem Set 1:**

****

Classify each statement as true or false.

1. T, O, and R are collinear.
2. X, O, and Y are collinear.
3. R, O, S, and W are coplanar.
4. R, S, T, and X are coplanar.
5. R, X, O, and Y are coplanar.
6. Does a plane have edges?
7. Can a given point be in two lines? In ten lines?
8. Can a given line be in two planes? In ten planes?

**Problem Set 2:**

Name a fourth point that is in the same plane as the given points.

1. A, B, C
2. D, C, H
3. B, C, H
4. Are there any points in  besides C and G?
5. Are there more than four points in plane ABCD?
6. Name the intersection of planes ABFE and BCGF.
7. Name two planes that do not intersect.



Classify each statement as true or false.

8  is in plane R.

9. S contains .

10. R and S contain D.

11. h is in R.

12. Plane R intersects plane S in .

13. Point C is in R and S.

14. A, B, and C are collinear.

15. A, B, C, and D are coplanar.

**Problem Set 3:**

1. Name a plane that contains .

2. Name a plane that contains  but that is not shown

in the diagram.

3. Name the intersection of plane DCFE and plane ABCD.

4. Name four lines shown in the diagram that don’t intersect

plane EFGH.

5. Name two lines that are not shown in the diagram and that

don’t intersect plane EFGH.

6. Name three planes that don’t intersect  and don’t contain 

State whether it is possible for the figures described below to exist.

7. Two points both lie in each of two lines.

8. Three points all lie in each of two planes.

9. Three noncollinear points all lie in each of two planes.

10. Two points lie in a plane X, two other points lie in a different plane Y, and the four

points are coplanar but not collinear.

Points R, S, and T are noncollinear points.

11. Suppose that P is any point of  other than R and S. Does point P lie in plane X?

Explain.

**Problem Set 4:**

 bisects . Find the value of *x*.

1. , 

2. , 

3. , 

**Problem Set 5:**

In the diagram below, bisects , , and . Find the measure of each angle.

1.  2. 

3.  4. 

5.  6. 



 and are supplements. and are supplements.

7. If , find and .

8. If , find and in terms of .

9. If two angles are congruent, then must their supplements be congruent? Why?

**PS 6:**

***Investigate the following using Geometer’s Sketchpad.***

1. If a point is on the perpendicular bisector of a segment, then it is from the endpoints of the segment.

*(To construct the perpendicular bisector, construct a midpoint of a segment, then the perpendicular through the midpoint)*

2. The shortest distance from a point to a line is measured along the from the point to the line.

*(To investigate, construct a line and a point not on the line. Construct a point on the line, then construct the segment between the two points. Measure the length of the segment and move the point along the line)*

3. If a point is on the bisector of an angle, then it is from the sides of the angle.

*(Construct an angle and the angle bisector. Construct a point on the angle bisector. Select the point and one of the sides of the angle and measure distance. Do the same for the point and the other side of the angle.)*

**PS 7:**

***Solve for the variables.***

1. 2.



3. 4.

**PS 8:**

1. Draw a shape (at least three sides), and copy the shape using a compass and straight edge.

2. Construct three lines, all parallel to one another.

3. Draw two segments of different lengths. Construct a rectangle whose sides are the length of

the segments you just drew.

4. Draw a square whose side length is equal to the shorter of the two segments you used in

number three.